

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-22 (cancelled)

Claim 23 (new): A refrigeration plant of modular design comprising: one or more liquefiers, supercoolers, two-stage evaporators with integrated liquid supercooler and suction steam superheater, injection valves, refrigerant compressors, frequency converters, lines, refrigerant and auxiliary refrigeration substances, wherein on account of the modular design reliability of the refrigeration system is high, the refrigerant compressor covers peak power by means of a frequency conversion, power of the refrigerant compressors is increased by the two-stage evaporator with multistage supercooling and suction steam superheating, energy for refrigeration generation is saved and shifted, and high operational reliability and availability of the refrigeration energy are achieved.

Claim 24 (new): The refrigeration plant as claimed in claim 23, wherein a module comprises one refrigerant compressor, one liquefier, one two-stage evaporator with integrated liquid supercooler and suction steam superheater, one injection valve, lines, auxiliary refrigeration substances and refrigerant filling.

Claim 25 (new): The refrigeration plant as claimed in claim 23, wherein a supercooler is connected upstream of the two-stage evaporator with integrated liquid supercooler and suction steam superheater.

Claim 26 (new): The refrigeration plant as claimed in claim 23, wherein one or more condensers/liquefiers for waste heat utilization is connected downstream of the refrigerant compressor.

Claim 27 (new): The refrigeration plant as claimed in claim 23, wherein a module or a plurality of modules are assembled in parallel to form a refrigeration system.

Claim 28 (new): The refrigeration plant as claimed in claim 23, wherein the refrigerant compressor delivers a mass flow required for a defined refrigeration power via the frequency converter.

Claim 29 (new): The refrigeration plant as claimed in claim 23, wherein the supercooler is connectable as a function of a demand for refrigeration.

Claim 30 (new): The refrigeration plant as claimed in claim 23, wherein the refrigeration energy for the supercooler is temporarily stored.

Claim 31 (new): The refrigeration plant as claimed in claim 23, wherein the refrigeration energy for the supercooler originates from independent sources.

Claim 32 (new): The refrigeration plant as claimed in claim 23, wherein the modular design requires only a small number of items of equipment and auxiliary refrigeration substances.

Claim 33 (new): The refrigeration plant as claimed in claim 23, wherein the modular design requires only a small quantity of refrigerant.

Claim 34 (new): The refrigeration plant as claimed in claim 23, wherein there is no significant pressure drop in the refrigeration line.

Claim 35 (new): The refrigeration plant as claimed in claim 23, wherein the two-stage evaporator with multistage supercooling and suction steam superheating is also used as a separate unit in all other refrigeration plants.

Claim 36 (new): The refrigeration plant as claimed in claim 23, wherein refrigeration powers and a ratio of energy input to energy output are significantly greater at the refrigerant compressors.

Claim 37 (new): A method for operating a refrigeration plant of modular design as set forth in claim 23, comprising the step of flowing a refrigeration-transfer medium on one side through a first stage of the two-stage evaporation with multistage supercooling and suction steam superheating.

Claim 38 (new): A method for operating a refrigeration plant of modular design as set forth in claim 23, comprising the step of flowing a refrigeration-transfer medium through the liquefier/recooler.

Claim 39 (new): A method for operating a refrigeration plant of modular technology as set forth in claim 23, comprising the step of passing a refrigerant through one or more refrigerant compressors, liquefiers, supercoolers, two-stage evaporators with liquid supercooling and suction steam superheating via injection member(s), through the two-stage evaporator with liquid supercooling and suction steam superheating back to the refrigerant compressor, thereby maintaining a cycle.

Claim 40 (new): A method for operating a refrigeration plant of modular technology as set forth in claim 23, comprising the step of maintaining an evaporation temperature, on account of the use of the two-stage evaporator with multistage supercooling and suction steam superheating, close to an outlet temperature of a medium that is to be cooled, and consequently similar to that achieved in thermosyphon operation and better than that achieved in dry expansion operation.

Claim 41 (new): A method for operating a refrigeration plant of modular technology as set forth in claim 23, comprising the step of causing a level of suction steam superheating up to a usable limit of the refrigerant compressor by a use of the two-stage evaporator with multistage supercooling and suction steam superheating.

Claim 42 (new): A method for operating a refrigeration plant of modular technology as set forth in claim 23, comprising the step of a defined power always maintaining an identical mass flow through the two-stage evaporator with liquid supercooling and suction steam superheating on both refrigerant sides.

Claim 43 (new): A method for operating a refrigeration plant of modular technology as set forth in claim 23, comprising the step of creating a direct link and an optimum for an evaporator power of a first evaporator stage taking account of supercooling upstream of the injection valve and the liquid fraction in the refrigerant at the outlet from the first evaporator stage, which is simultaneously the inlet to a second evaporator stage.

Claim 44 (new): A method for operating a refrigeration plant of modular design as set forth in claim 23, comprising the step of providing operation with two-stage or multistage supercooling and operation only with internal supercooling.